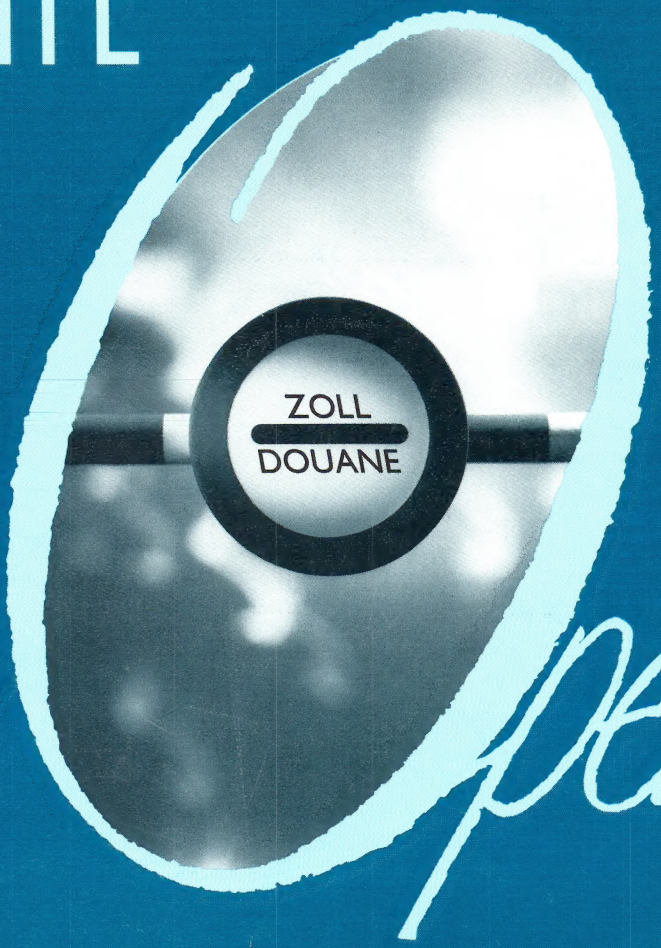
DECWORLD

December 1991 Digital's Worldwide Employee Publication Winter

THE Open ADVANTAGE



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DECWORLD

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ON THE COVER:
The Open Advantage campaign was launched in Europe this fall. Pictured is an example of one of the ads. For more information on the U.S. campaign and an example of their ads, see pages 13-15.

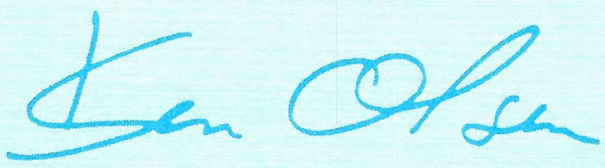
Traditions of Science

"Looking back at my days at MIT, I see something that was very important to our company. Science education then was left over from the 1930s, when there was a different attitude in science: scientists did everything themselves. They had this absolutely religious passion for truth and for accuracy, and they deplored exaggeration or misleading data. Today, science is somewhat pragmatic: the need is to get results. But that old tradition has had a great influence on us at Digital.

"The stock market doesn't have any interest in this idea and neither does the press. It seems that our stock markets and our government would love to have every company sold and all the assets cleaned away. There's no interest in investing in the future.

"But we still believe religiously that what pays off is consistent traditions of science that stress learning and then doing what you learned. We don't brag and we don't announce things that we don't think we can soon make. Our emphasis is on disciplined viability, testing, documentation and sticking to our knitting in a rational, well organized approach."

Ken Olsen



Ken Olsen

To U.S. employees:

Since the inception of the DELTA program, many married U.S. employees have written and asked why do we need to mail two issues of DECWORLD to their home. Our answer has been that Publishing and Circulation Services ("owners" of the Employee Master File) have indicated to us for several years that the cost of creating and maintaining software to eliminate duplicate mailings was costly and not a high priority for them.

With this issue of DECWORLD, that has changed. We are now told that duplicate addresses will be eliminated beginning with this issue. Employees are advised though that the address labels must be EXACTLY alike in order for one to be eliminated.

Regards,
The Editors

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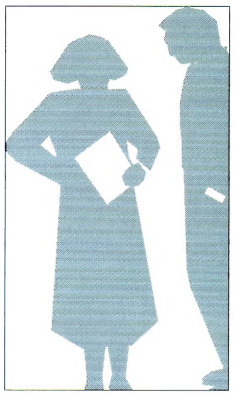

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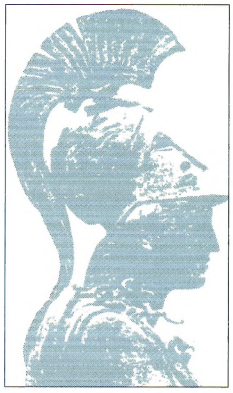

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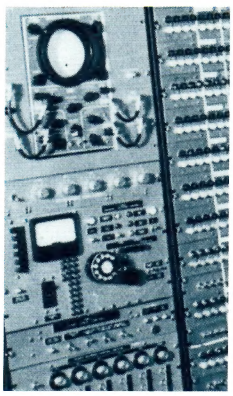


16

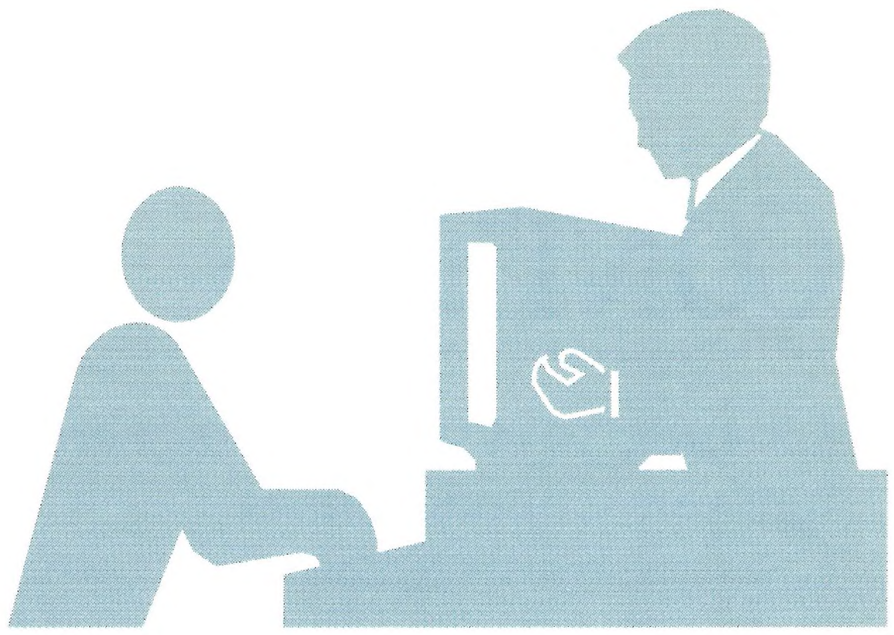
Bob Everett

Bob Everett

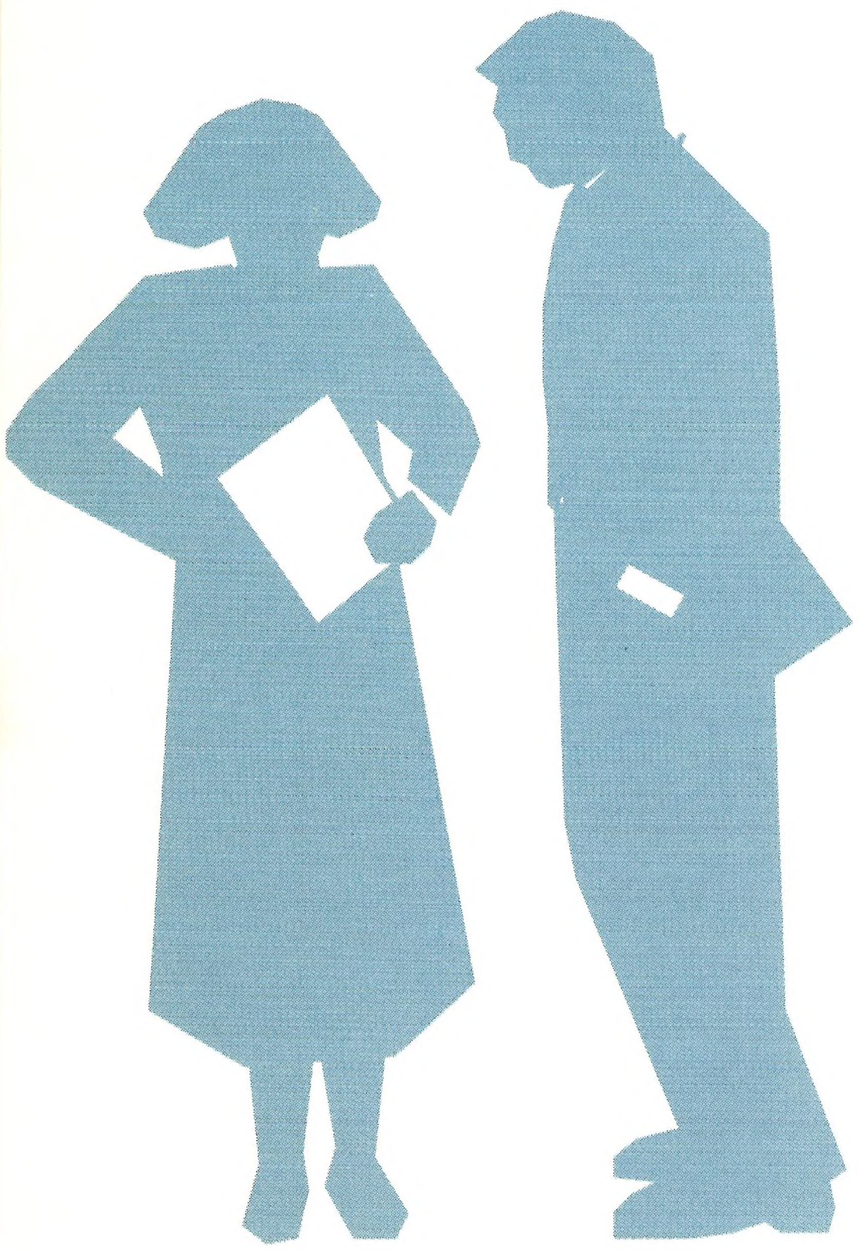
Digital board member Bob Everett discusses life at MIT after World War II. For a more in-depth look, see page 16.

Nobody knows what he is doing when he's on the leading edge. Lack of slack results in cost overruns, because it costs more to build something if you've got less than the money you need, than if you had the money you needed at the beginning.

– Bob Everett



Listening to the "customer's voice" creates innovative oppportunities



What is the real goal in today's marketplace?

A. To be competitive

B. To stay ahead of the competition or

C. To be innovative – create the market for others to compete in

The best answer, according to Russ Doane, Digital's leader of the Voice-of-the-Customer initiative, is C.

"If customers aren't delighted with what you offer, you are condemned to be just competitive," says Russ. "You want your customers to see you as more than that – a contributor, an innovator."

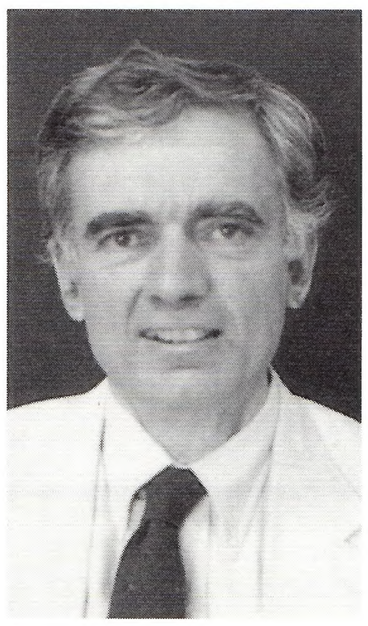
Customers see their suppliers in terms of delighters, satisfiers and dissatisfiers, Russ explains.

Dissatisfiers are the reasons customers don't want to do business with you. Or dissatisfiers are the things that customers don't ask for, and won't pay a premium for, but if it's not in the product, they are upset. A customer most likely won't explicitly ask for a system that doesn't crash. They expect a quality machine upfront.

"The reasons don't have to be complicated," says Russ. "Some can even be solved very quickly. But when they happen, it is difficult to make amends because in the customer's eyes, they shouldn't have happened."

Satisfiers are those qualities a customer expects to pay for. In the example of buying a word processor, one that uses a spell checker has more value to the customer because it enhances their work.

Under normal circumstances, it might appear that the goal is to be a satisfier. But if you listen to Russ, satisfaction should be the norm and delighting the goal.



Russ Doane

According to the dictionary, delight means "become greatly pleased or rejoice."

Customers value contributions to their business success. They value uniqueness in their vendors. They want to be delighted by what they have purchased, not just satisfied.

"We want to be unique to our customers," says Russ. "We want to be the innovators so others are forced to play competitive catch-up."

But how do you delight customers? How do you create the new markets that force others to compete with you? How does Digital know what products and solutions help customers work more effectively and achieve their business goals sooner?

Karen Holtzblatt

One method is to visit customers at their work site and interact with them at work. The technique is known as contextual inquiry.

Developed by Karen Holtzblatt, COHESION User Environment achitect and principle software engineer, and Sandy Jones, software senior engineer, Software Usability Engineering, contextual inquiry is a structured way of gathering information from customers about their work practices and experiences.

The approach is based on field research techniques and focuses on interviewing customers in their own context as they do actual work.

Contextual inquiry has been used primarily within software development. However, it is also used for designing hardware, manufacturing processes, services, total business solutions and for competitive analysis.

It was developed to meet three challenges:

- to identify a process for designing systems that support people who engage in similar work in many different business contexts and cultures.
- to identify an expedient process for gathering customer informa tion in the time available.
- to identify a means of gaining appropriate and helpful information about customers' work.

Three key concepts

The contextual inquiry technique is based on the principles of context, partnership and focus.

To build effective systems, we must understand how people do their work, and their problems with work processes and supporting tools.

This work context includes the tools people use, the people with whom they work, the culture of the organization, the physical environment and the work demands associated with particular activities.

Rich and accurate information about how people work is best obtained when designers of systems or processes go to the customers' work place and talk with them about their work while they work. The concept of context tells us to gather information within and about the actual context of a real work project.

Interfacing with the customer at their work site is critical to the success of contextual inquiry.

"If we ask customers what they need, they can't tell us," explains Karen. "Customers are experts in doing their work. But they usually can't articulate the key elements of their work because they don't naturally try to conceptualize it while they are working."

Sandy Jones

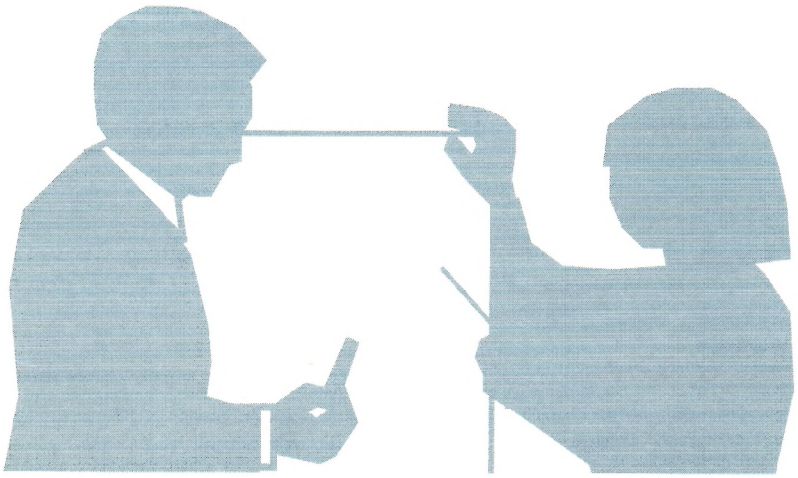
Before contextual interviews, product researchers used traditional laboratory methods such as questionnaires, focus groups and laboratory methods to develop usable products and define requirements.

"We would test people, analyze the results, calculate the average score, report the problems and give the information to the developers," says Sandy. "The developers then made the changes based on the problems the test subjects encountered."

Over time it became apparent that the laboratory method was too narrow. "It wasn't real people doing their real work in a real work setting with constraints and deadlines," adds Sandy.

Contextual inquiry gets us out of the laboratory and into the field where we can see our customer's work needs.

"On the other hand, if we only observe customers actions, we might misinterpret the meaning of their actions," says Karen. "We share our interpretations with customers to create a shared understanding. By doing this, we enroll customers as partners in inquiry."



The principle of partnership recognizes that in the area of personal experience and work, the customer is the expert.

Open-ended questions let customers direct the conversation to those things that are central to their work experiences. The interviewer then shares their interpretations of the work and emerging ideas. The customer can then validate the interpretations and build upon the design ideas.

In this way, we co-create an understanding of their work and design technological solutions.

Take the case of an oil company that complained to Digital about our workstations' slow start-up time. Start-up time wasn't an issue when the machine was developed because at Digital, we turn the workstations on and leave them on.

The oil company, on the other hand, loaded the workstations in large trucks and took the machines to the fields. The machines had to be shut off when the charges were lit in the wells. After the blast, oil company workers re-booted the machines. Work at the site was delayed while the machines took time to start-up.

In those circumstances – the customer's reality – the start-up time cost them money. Once engineering realized the context in which their machines were used, they understood the need for a faster start-up time and we were on the way to solving a customer's problem.

Looking at situations' through the customers eyes requires us to let go of some of our own assumptions. Whenever we design, we have assumptions about the nature of the customers' work and how technology solves their problems.

These assumptions can be blindspots that keep us from seeing information that challenges our assumptions. These entering assumptions or entering foci need to be expanded to include the customer's view of their work and validated to eliminate assumptions that are incorrect.

But having such a focus is also a strength. It tells us what is important to look for, it drives the questions we ask the customer and forms the framework for understanding the work.

Focus is the way to manage the conversation between customers and interviewers. By having a clear focus upon entering the contextual interview we see and ask about the things that are important to a design. By sharing our interpretations and design ideas we let the customer shape them to be more reflective of their actual work patterns and needs.

Karen notes that once a contextual inquiry team thought a customer was annoyed by what appeared to be a cumbersome technique to set up keypad definitions. Once the customer was questioned, she showed how quick and easy it was to do the setup with little disruption.

Using the principles of contextual inquiry the conversation with the customer is directed to help get the information needed to do system design. Customers often enjoy providing solutions during the inquiry.

These solutions are specific to that customer site but "Our job is to go beyond and see the whole work pattern so we can redesign the system to support the entire work pattern for multiple kinds of users.

Using contextual inquiry across multiple users allows us to get many perspectives on the work and a robust system," explains Karen.

The team concept

Typical contextual inquiry visits are done by design teams of three to six interviewers that include:

- user environment designer,
- human factors representative,
- product manager,
- engineering manager,
- developers,
- marketing representative,
- documentation representative,
- CSSE representative.

Teams go to customer sites for one day visits. The design team interviews six to 12 customers at the site.

Following the visit, interviewers transcribe tapes or notes and make them available to the team. The team analyzes the data and designs from the data. The number of visits depends on available time.

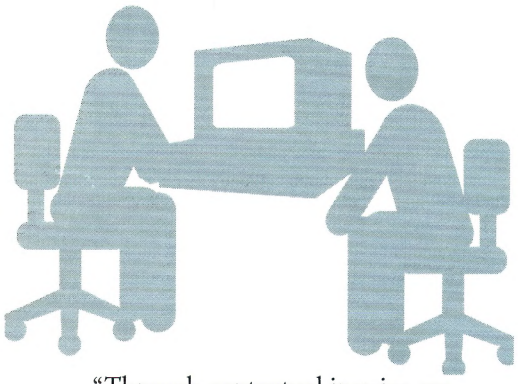
A focal person (typically the product manager) is chosen to work with customers to set up the partnerships and visits.

The team synthesizes the customer information in a structured meeting and out of this produces a coherent statement of the problem and system design.

Contextual inquiry as a process moves us to a team design process that ensures that all members of the team hold a coherent system view when building their pieces.

Changing work styles

Contextual inquiry affects the way Digital works as a company as well as the way we design products.



"Through contextual inquiry, we moved from an understanding of customer need to a transformation in our business," explains Karen. "Now we can create systems that are much more integrated from a customer's point of view and driven by the work that customers are doing.

"We don't ask customers to look at our technology and find a use for it. Instead, we say to customers, 'I understand your problems. I designed a system to deal with your problems. I looked into my bucket of technology and I said to myself, what technology, services, training and whatever will completely deal with my customer's problems. I then put in place a management and organizational process that allows me to be a provider of solutions not just a builder of products.'

"Today engineers need to learn how to talk effectively to customers, how to design a customer meeting and how to listen to customers. These same engineers who once stayed in their cubes now have to work with a different body of people.

"Simply stating we will engage in product design to support our customer's work means a change for Digital employees too. As much as we need to understand how our customers' work, we need to understand how our employees work – and how the two can become integrated."

Guiding trade-offs

Once we have a profound knowledge of the customers' work in their own context, we are off to a good start, explains Russ, adding "and for small projects, engineering intuition can take it from there."

However for large projects, where the stakes are high, we've gained a lot of experience at Digital with a specific kind of cross-functional planning meeting called QFD.

"Call it Quality Function Deployment or Quality Factor Development," adds Russ. "Or you could follow some of the more than 100 groups at Digital who have used the method and call it Qualities for Designers. Or even Quit Fighting and Do it.

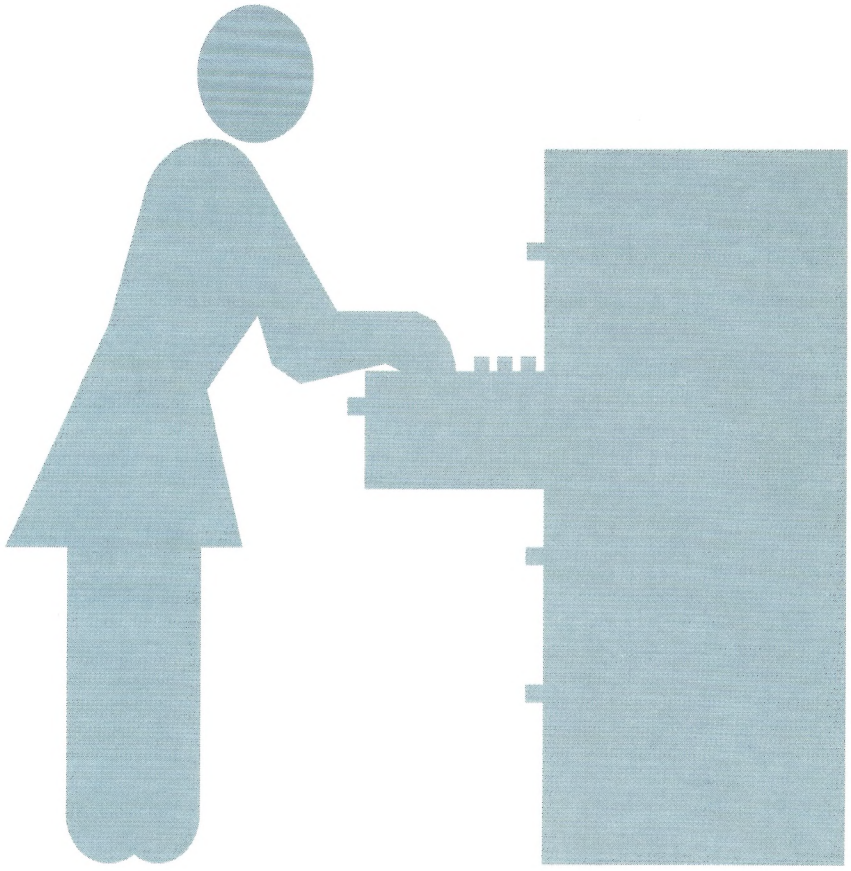
"Whatever you call it, this two- or three-day woods meeting helps a group explicitly combine three things:

1. the voices of their customers, co-created in contextual inquiry,
2. business direction and strategy, and
3. the nature of the relationships between benefits customers would value and the actions and technologies we can apply."

To get everything started, the first step Russ recommends is to plan a QFD.

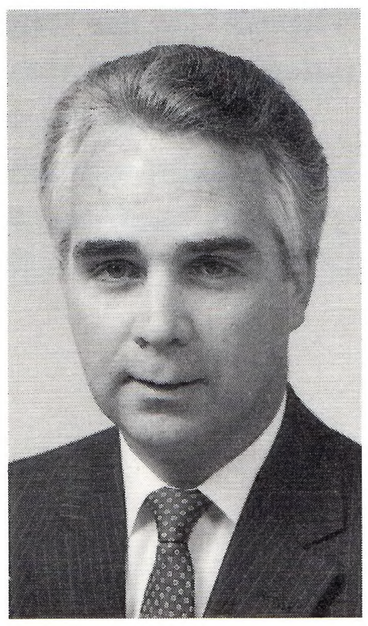
"That includes identifying key customer groups and the QFD participants who will do the visits," he says, encouraging groups to sign up for QFD.

"There are over 20 experienced QFD facilitators who can help employees. Information is listed in the Notesfile METOO::QFD. Why not look into it? ■



A fresh look at costs helps Digital's competitiveness

The 90s challenge



Bruce Ryan

Faced with slowing revenue growth and increasing expenses in FY91, Digital created a re-engineering plan to deal with its cost problem.

Re-engineering means taking a fresh look at a process – doing things differently and eliminating work where it was redundant or no longer necessary.

Mick Prokopis, vice president, began the process to redirect the company's cost structure in August of 1990. In January, Mick was asked to help drive the New Management System through the corporation. In order to maintain the momentum, Mick's responsibility was transferred to Bruce Ryan, vice president and corporate controller. The following article is a discussion with Bruce on the success of the re-engineering programs.

"Continual and rapid change in a much more globally competitive environment is our challenge for this new decade," says Bruce Ryan, vice president and corporate controller.

"Japanese competitors now occupy three of the top ten industry rank positions, and domestically some of our competitors have already achieved some of the cost and productivity improvements that will be prerequisites for survival. Europe and other Asian computer companies are also positioning for more aggressive competition."

To meet the competitive challenge, Digital set a goal last year of significantly reducing FY91 expenditures through cost reduction and cost avoidance.

"Although we made major inroads in FY91, the key message I have for FY92, is it isn't over yet. In fact, FY92 is more important than FY91. One sobering note should be the company's restructuring charges.

"In FY90, the majority of the $550 million charge was spent on people-related costs of downsizing. We did, however, at the same time, reduce our facilities by about five million (net) square feet. The FY91 restructuring charge – $1.1 billion – is currently planned to be split evenly between people-related and other expenses (including facilities and equipment).

"I can't emphasize enough that the industry is changing. The cost problems we built for ourselves in the past couple of years haven't gone away. All those changes are accelerating and we have to do more in FY92."

Learning from FY91 to help with FY92 goals

When asked what was the single most important lesson we learned in FY91, Bruce notes: "Once again we learned that if we get focused, have proper management attention, communicate and measure, progress occurs. People respond when they know what they have to solve."

"It is important to understand that our costs continue to grow faster than our revenue (without restructuring charges). Therefore, we need to accelerate the rate at which we are reducing expenses in order to break the cost curve.

We aren't out of the woods yet. We need to be constantly vigilant to our costs.

– Bruce Ryan

"That's a significant challenge when you consider that we have to deal with inflation of four to five percent and salary increases," says Bruce. "The industry continues to change and the economy hasn't improved as we had expected it to. We will use our re-engineering program to do more. We will look at our business processes and programs that cut across multi-functions.

"We aren't out of the woods yet. We need to be constantly vigilant to our costs. It's going to take some hard work to accomplish that goal but our success with the re-engineering programs we put in place indicates we have the resolve to do it."

Re-engineering begins with cost captain plan

An important component of the re-engineering plan is the cost captain program. Cost captains are Digital senior managers whose mission it is to identify worldwide cost efficiency opportunities and lead the company to better management solutions.

There are cost captains for facilities, telecommunications, travel and distribution, to name a few. The list grows as new opportunities are identified.

"When we named the cost captains, our goal was to have them go into their areas and look at the situation on a broad basis," says Bruce.

"The process was challenging. Everyone understood the seriousness of the company's situation and went off to do their best. There were some early struggles, but overall, we made significant progress."

Bruce believes people rallied to make the program a success because issues were identified, measurements established and effective communication occurred.

Success stories

One of the ways Digital is able to reduce its costs is through better leverage of its buying power.

Purchasing, for example, is responsible for five billion dollars of expenditures worldwide. By renegotiating major contracts and consolidating our supplier base, Purchasing realized a $180 million reduction in administrative (known internally as G & A) and inventory costs.

Other examples of FY91 savings include:

- Information Management and Technologies, $96 million;
- Travel, $17 million;
- Freight, $17 million;
- Telecommunications, $10 million; ($35 million over three years) and
- $30 million in the Agency, Contractor, Temporary and Consultant Services (ACTC).

In Travel, Digital concentrated on using its volume to leverage reduced rates in airfares and hotel rooms. In less than three quarters, employee participation in the airfare discount program increased from 69 percent to 90 percent.

Corporate Travel re-negotiated rates with over 140 hotels. Based on FY90 usage, the new rate is expected to save $12 million per year when fully utilized.

Headset changes are difficult but necessary.

– Bruce Ryan

"A key to reaching this goal is our constant need to re-evaluate our reasons for traveling and look to alternatives," explains Bruce.

For example, says Bruce, we have a very successful video conferencing pilot program linking Salem, New Hampshire; Boxboro, Massachusetts; and Puerto Rico. This enables complete product teams to join in meetings which previously were attended only by the few team members permitted to travel.

The program dramatically decreased travel to and from Puerto Rico. For two business groups alone – one in Salem and the other in Puerto Rico – travel savings in FY91 were $400,000. Travel between these locations is not allowed unless employees can prove they have tried to meet their business needs first by video conferencing.

"Sometimes the solution is simple such as standardizing pallets (shipping skids)," notes Bruce. "In the U.S. and Europe we decreased the number of general-purpose pallet types from 18 to seven and saved $60,000 in FY91. Fully implemented, this represents a potential annual savings of half a million dollars."

Digital is also becoming more efficient in its use of contractors, consultants and temporary workers. Besides renegotiating vendor contracts, the company improved the use of an electronic tracking system for temporary labor and reduced the number of personnel. The result was a $30 million plus savings for FY91.

"We were able to accomplish this because managers are again re-evaluating the need for temporary help and looking at other ways to get the work done," notes Bruce.

"The 10 percent cost reduction we realized here is to the credit of people who learned to work more effectively cross-functionally. Headset changes are difficult but necessary."

Employees rally

Employees, through the DELTA program, rallied with their own cost-saving ideas. The following are some of the major ideas:

- The Central States Region employees, conducting an "It's My Company, Too!" campaign, shaved annual company costs by $288,000 in two quarters. They found ways to cut training, food service, tape storage and software license costs.
- The Northern California Administration Group came up with $642,000 in cost-savings ideas. With 16 of the ideas already implemented, these employees reduced security costs, voluntarily cut external capital spending and saved money on energy expenses and cleaning.

Our resolve isn't to only gain in market share, but also to demonstrate our leadership in business management.

– Bruce Ryan

- The EIC Publication Services and Software Product Description (SPD) Administration groups in Maynard, two cost centers, jointly saved $88,000 in expenses. They did it by looking at past expense reports and prioritizing areas to be cut. Travel, supplies, telecommu nications and training were their prime targets.
- Dave Parmenter in Nashua, NH, created a time-saving program for translating PostScript to ASCII text so it could be read on-line. When he made this available to employees through Digital inter nal news media, he received about 50 worldwide requests for his program.
- John Baird started a three-ring binder reclamation program in Stow, MA. His idea, after publication, was adopted by the Minneapolis, MN, Digital Sales office.

"Everyone needs to pitch in when it comes to cost-savings," continues Bruce. "It is a team effort. We need to cut costs, not just on the profit and loss side but on the balance sheet as well. We need to rightsize our business, not just in population, but our plants, warehouses, office facilities and associated capital.

"Our resolve isn't to only gain in market share, but also to demonstrate our leadership in business management. The result will be improvements in both our profit and loss statements and our balance sheet."

New Management System plays successful role

The New Management System (NMS) plays a key role in helping managers plan for profit.

"We have identified profitability at the business unit level," notes Bruce. "Now we have a system where the people who put together the business plans on a day-to-day basis on the customer side have full knowledge of the impact of their decisions.

Pricing is critical. We need to transfer products from one business unit to the other at a competitive price.

– Bruce Ryan

"The NMS will be a tremendous help in getting our resources better aligned, so we are a profitable business and generate revenue for our value added.

"Pricing is critical. We need to transfer products from one business unit to the other at a competitive price. We have to return a profit at that competitive price so it's forcing us to benchmark, so to speak, against the competition.

"Now our business managers, acting as entrepreneurs, have the visibility they need at the bottom-line level. They can make the tradeoffs they need to. They have better control on their business.

"They eliminate what they feel is appropriate to generate the right level of profitability.

"The NMS gives us a tremendous morale boost as more people get involved in the process and understand profitability. NMS is a very positive tool."

Moving in the right direction

With the NMS, cost captains, managers and employees helping, Bruce believes Digital has the momentum going in the right direction.

Asset management, he adds, also helps keep us in the right direction.

"Asset management is very closely connected to costs because it takes people to manage assets," says Bruce. "It takes either space for inventory or administrative time to research invoices. One of our biggest financial opportunities is in our balance sheet. We can generate more cash with better performance.

"There are lots of costs generated because of assets; it's not just sitting on the balance sheet. The fewer assets we have, the less costs we have also.

"We made some real progress in asset management the second half of FY91. Our accounts receivable showed significant improvement. We could directly attribute that to the beginnings of the NMS and the fact that the Field did an excellent job in getting accounts receivable information to the account managers.

"The result was accounts receivable showed a sharp improvement. We were able to improve our accounts receivable performance in Q4 by nine days.

The incentive is that we all want to be part of a company that is a leader, is competitive and viewed as best in class. Working together is key to our success as a team and as a company.

– Bruce Ryan

"There was significant improvement in inventory despite the fact that we missed our revenue budget. Inventories declined $48.4 million in Q4. That was excellent when you consider the shortfall in revenue and the tremendous changes in the business mix.

"The incentive is that we all want to be part of a company that is a leader, is competitive and viewed as best in class. Working together is key to our success as a team and as a company." ■

Project Athena accelerates technology time to market

Changing models for changing times

In the early days of computing, the waterfall method of technology introduction was acceptable. Developers took these steps:

1. did research;
2. handed-off to advanced development;
3. handed-off to a product development group;
4. did the development; and
5. shipped to customers and support.

That process generally took five to ten years and often failed or was too late to the market. Such approaches aren't acceptable today if a company is to remain innovative and profitable.

As customers began to install larger and larger workstation systems, the shortcomings of time-sharing operating systems became increasingly evident. Information departments found that they were spending large amounts of resources (manpower and skills) on managing workstations, but that the results weren't satisfactory.

Existing techniques were limited. As workstation networks would naturally grow, the prediction was they would become unmanageable at any cost. That's when Project Athena's solutions – in its code – came into play (see related story at right).

George Champine

The MIT code helps solve the problems of managing large numbers of distributed heterogeneous workstations. Basically, the code reduces systems management requirements, so one systems manager can handle 200 UNIX workstations, rather than just 25, which is typical today.

The new model, using lessons learned from Athena, takes the product directly from research to a group of selected customers. These customers need the product now and are technically capable of dealing with the problems inherent in using research prototypes.

Athena innovation makes mark on computer industry

After eight years of hard work and innovation, Project Athena is now completed and has left its mark in many ways on the computer industry.

Project Athena was an undertaking by the Massachusetts Institute of Technology (MIT), Digital and IBM. Its purpose was to provide a high quality workstation-based distributed computing environment for research and education at MIT.

The project was funded on the faith that if highly capable people are put to work implementing a leading edge system, that good things will result.

– George Champine

The best known product handed off to Digital from Athena is the X Window System in the DECwindows product. Today the X standard is supported by every major manufacturer of workstations.

But Athena also provided Digital with a model for ways to transfer innovative technology to customers quickly. By using the Athena model, Digital hopes to generate more revenue and delight customers at the same time.

"The Athena project has been fruitful in developing, transferring and stimulating new technologies that become products," says George Champine, associate director, Project Athena.

"Athena's record for technology transfer is considered remarkable. This is in spite of being both physically and organizationally remote from receptor organizations, and moreover having the charter of development and operation rather than research or advanced development."

An interesting note about Athena is that none of the products that grew out of the project were envisioned at its inception.

"The project was funded on the faith that if highly capable people are put to work implementing a leading edge system, that good things will result," explains George.

"The results obtained from the project have more than justified the faith placed in it from the outset."

Digital maintained five resident engineers at Athena. Employees were assigned to Athena for varying lengths of time, after which they returned to Digital.

Since most of Digital Engineering is located between 30 to 50 miles from MIT, it was relatively easy for most employees associated with the project to travel back and forth. At its peak Athena was visited by approximately 4,000 Digital employees and customers each year.

"This circulation of people resulted in significant technology transfer," believes George.

"It was the responsibility of the Digital employees at Athena to ensure technology transfer occurred. By keeping appropriate groups within Digital fully informed of the results of the research on a continuing basis, it happened.

The Athena environment freed the individual from administrative and management duties, and maximized productivity in research.

– George Champine

"It was also the responsibility of the employees to review Athena plans and technical approaches with the appropriate people within Digital."

An Athena assignment was the opportunity to work with leading researchers on the forefront of technology.

"The Athena environment freed the individual from administrative and management duties, and maximized productivity in research," says George. "The employee's value upon return to Digital was increased by the experience. The person-to-person relationship made the difference between success and failure.

"On-site Digital people were crucial. They provided important skills. They guided the project in the directions of value to Digital." ■

The changing model at work

One of the most important products to emerge from Project Athena was DECathena.

"DECathena isn't just software, but also includes a series of policies and practices, sold as a service product," says George Champine, associate director, Project Athena.

In a move to introduce DECathena to customers as early as possible, Digital set up the Innovation Technology Resource Center (ITRC) in Cambridge, MA.

The ITRC's initial task was to port MIT Athena to ULTRIX, Digital's native implementation of UNIX. Together with an ULTRIX Resource Center at an adjacent site, the ITRC developed, marketed, installed and supported what became Digital's implementation of Project Athena software, called DECathena.

"As demonstrated by DECathena, the ITRC was successful in validating the new model of technology introduction," says George.

"Because Athena and DECathena are the only solutions to the workstation management problem, and because only Digital supported Athena, this technology became an important differentiator for Digital sales people when they needed an entree into a new account.

"It also generated a unique advantage in an otherwise undifferentiated commodity market. In some instances, the competitive advantage of DECathena was so compelling that contracts were awarded to Digital that had been earlier lost to the competition, and were awarded to Digital when the company was the highest bidder."

The software developed by Athena implements a client/server-based model of a workstation network. The Athena version provides an authenticated, network-transparent sharing of system resources and services.

Although Athena didn't invent client/server computing, it provided the first coordinated, high quality, visible and convincing proof that this technology worked well, adds George.

The distributed computing environment of OSF has essentially the same level client/server architecture as Athena, but with different implementations.

DECathena provides additional elements critical to the cost-effective management of distributed systems that aren't yet a part of the OSF products but will come at a later time. ■

New ads boost Digital's ratings

Digital's Open Advantage advertising campaign is changing customers' perceptions of Digital as a supplier of open solutions while winning applause from industry observers.

A study that evaluated the impact of two particular ads on key customers and prospects produced these findings:

- Digital's ratings based on specific open-computing benefits improved.
- Digital's overall ratings improved.
- Competitors' overall ratings, meanwhile, declined.

Industry observers, quoted in a lengthy New York Times article, called the Open Advantage ads "attention-grabbing" and said they signal Digital's "new vitality" and "formal commitment" to truly open systems computing. Long-time Digital watcher Sonny Monosson applauded the ad campaign as a "bold and aggressive" challenge to Digital's competitors.

Henry Heisler

In addition, readership studies conducted by periodicals such as Business Week and ComputerWorld have revealed that the Open Advantage ads were among the 10 "most read" out of 40 to 45 ads ranked. "We are very pleased with the initial results of the Open Advantage campaign," said Henry Heisler, corporate advertising manager.

"However, if this campaign is to truly meet its objectives, it is critical that we continue to support this new position in all of our communications in the months ahead.

"A new position is not established with a few months of advertising," he said. "It will take many months of advertising, public relations, direct marketing, tradeshows, and more before Digital's targeted audiences understand and believe in Digital's Open Advantage."

The results of the evaluation study, which was commissioned by Corporate Public Relations, show how the Open Advantage campaign messages help us convince customers and prospects that Digital is the pace setter in open systems computing. Participants in the Boston Research Group study were 250 upper-level managers in major corporations that use multivendor computer systems. All are involved in the evaluation or purchase of computer equipment.

The two ads submitted to the participants emphasized the Open Advantage and NAS. Both ads subsequently appeared in The Wall Street Journal, Business Week, Fortune, Forbes, and the computer trade publications.

Before they saw the ads, participants were asked to rate Digital, IBM, Sun, Hewlett-Packard, and AT&T as open computing vendors. The responses showed Digital tied for first place with HP, followed by IBM, Sun, and AT&T.

After reading the ads, participants raised Digital's average rating by approximately 10%–and lowered their ratings of all the other vendors, particularly HP.

Participants ranked Digital higher than the other vendors on all specific attributes of open computing listed in the survey: multivendor integration, open networking, applications integration, vendor independence, multivendor support, investment enhancement, and open business attitudes.

In their different reactions to the two ads, the participants indicate how we can use the ads' messages in our marketing efforts.

Asked what the "Open Advantage" ad meant to them, participants offered these definitions–integration or networking, multivendor hardware and software, and a single system.

In response to the "NAS" ad, three-fourths of the participants demonstrated general understanding of the message we want to communicate. Their definitions of NAS included multivendor communications, single system, standardization, and networking.

Peter Zotto

Both ads persuasively communicate Digital's open computing strengths; however, they affect customers in different ways. The "Open Advantage" ad was found more effective in conveying global messages:

- Digital provides an open advantage to customers.
- Digital is a leader in developing and supporting standards.

The "NAS" ad was found more effective in addressing specific open computing issues, such as vendor independence and multivendor support.

"Clearly, our Open Advantage campaign is telling customers what they have been waiting to hear," said Peter Zotto, manager, Marketing Communications. "The positive responses of the survey participants, readership polls in leading periodicals, and the reactions of industry watchers tell us that the message of the Open Advantage and NAS sets Digital apart from and ahead of every one of our competitors."

Marketing and communications groups have produced an array of Open Advantage activities and promotional materials, and the list continues to grow.

Major announcements are coordinated in ways to stress how they advance the "open" advantages of Digital's computing. Support materials range from Open Advantage background kits to a focus on the theme in Digital's magazines for customers.

Marketing group teams are making presentations to customers, often with the backing of video tapes that describe various areas that make up Digital's Open Advantage.

Many of these materials are available through the LOS system and the VTX AVCATALOG.

If making all your computers and applications work together were as simple as hooking up another device or introducing a new technology, you would have done it by now.

But true systems integration isn't that simple. Because it takes more than technology to make it happen. It takes people as well. People who understand your business. People who understand how integrating a multi-vendor solution can affect your business. People who can advise you, consult with you, even train your users on multiple vendors' systems.

Digital has such people. Over 40,000 of them, actually. A global support and service group capable of solving all your systems integration problems.

Which means no matter how large your company or how small your work group, we can do everything from manage your multi-vendor solution to provide a single point of contact throughout every stage of a systems

NAS FROM DIGITAL.

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DIGITAL OPENS THE WAY TO SYSTEMS INTEGRATION.

integration program.

We've been doing so for more than a decade. Supporting multi-vendor networked solutions for hundreds of companies all over the world, while integrating over 8000 hardware and software products from more than 800 different vendors.

Concurrently, we've taken a leadership role in all the major standards bodies and consortia, helping to develop such widely accepted standards as Motif®, OSF®/DCE, X.400, IEEE/POSIX, OSI and scores of others. One result of which is our Network Application Support (NAS), which can help you build open, multi-vendor networks with true application interoperability across different platforms and operating environments.

Another result is the new and widely heralded Advanced Computing Environment (ACE) initiative. Destined to solve the software compatibility problems between RISC and x.86 products.

All of which means if you've got the will, Digital has the way to integrate all of your systems. To find out more, talk to a Digital representative. digital™

THE OPEN ADVANTAGE.

MOTIF AND OSF ARE REGISTERED TRADEMARKS OF THE OPEN SOFTWARE FOUNDATION.

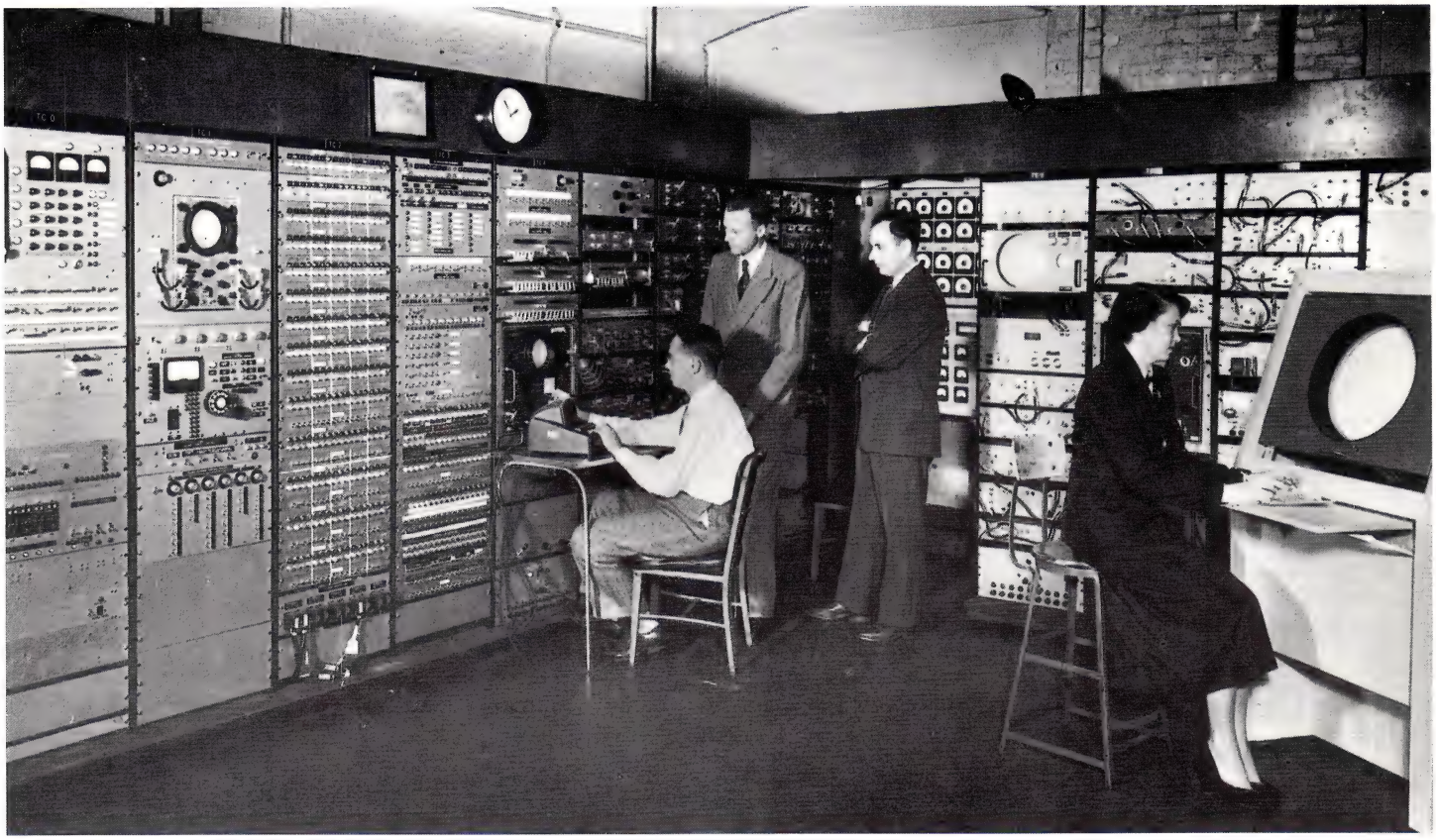
Life in a free wheeling organization

In 1989, Jay W. Forrester and Robert R. Everett, computer industry pioneers, were awarded the U.S.'s highest technology honor, the National Medal of Technology. The duo were recognized for their work on the Massachusetts Institute of Technology's Whirlwind computer project of the 1950s. At 2,500 square feet, Whirlwind was the world's first interactive electronic digital computer.

It was on the Whirlwind project that the men met Ken Olsen, then an MIT graduate student.

Jay served on Digital's Board of Directors from 1957 to 1965. Bob joined the board in 1986 and remains a member.

Editor's note: The following excerpt, taken from an ongoing project to record the company's history, provides employees with a unique view of life in a post-World War II computer lab at the Massachusetts Institute of Technology (MIT).



The whirlwind computer was the world's first interactive electronic digital computer. L-R: Stephen Dodd, Jay Forrester, Bob Everett and Ramona Ferez.

Jay Forrester: When I began wartime research in 1940, MIT didn't have a purchasing department, a security or guard system. When I wanted to buy something, I ordered it from a supplier, then took an MIT purchase order out of my desk, signed it and mailed it.

Because classified work required guards, I got a Cambridge (Massachusetts) police badge and pistol permit.

When World War II ended and I began work on digital computers, that general atmosphere prevailed. The main objective was to get the job done, and get it done quickly. There had not yet been created the barriers that gradually come into being when enough people abuse the system.

Bob Everett: People put restraints and reviews in partly as a reaction to somebody doing something wrong. Organizations, as they age and grow, build up bureaucracies, which are difficult to remove. You almost have to start over. I think the advantage we had is that we were essentially able to start over.

JF: If you're working at the front of an entirely new field as we were in digital computers, not many people interfere because they don't see themselves as having the competence.

BE: We had opportunity, resources, technology and the momentum left over from the war.

Today one would be forced to write performance requirements and convince others they could be done. It would be very difficult to do that kind of innovating today.

JF: I have sometimes said that it was easier to design a North American air defense system (which was the original specification for the Whirlwind) in the late '40s and early '50s – in spite of the lack of any available technology – than it would be to do it today. Today, there would be ten layers of people, all of whom would think they could do it as well or better.

BE: The management style at the MIT Division of Sponsored Research, encouraged bad news to flow uphill. There was the presumption that when things were all right, you didn't need to push good news uphill.

With bad news flowing uphill, you knew there would be people to help out when there was a problem. The layers above consisted of people who were there to help solve problems.

This is very different from an organization in which, if there is a glimpse of bad news, pressures and criticisms, rather than help and assistance, come down from above.

JF: The post-war MIT environment was shaped by the research laboratories of World War II. These labs were free-wheeling operations organized around a vision of what needed to be done.

They had considerable freedom to carry out that vision. More than in other institutions, and more than at MIT now, it was a free enterprise society in which people could do about anything they wanted as long as it was honorable and they could raise the money for it.

BE: 'Honorable', meaning straightforward. They told you what they thought; you knew what they were about. You could argue with them, disagree, but you trusted them. I think that's the foundation of the word honor in my opinion. What do you say, Jay?

JF: Probably. It also carried the connotation of being useful, in the public interest; and within MIT, something that was innovative and not routine.

Working in that environment was very free-wheeling. There was a multiplicity of projects. You had to argue, stand up to the laboratory director to get resources for your projects.

He respected people who stood up, and he became helpful in proportion to your degree of independence. He encouraged people in their own individual projects, without either trying to dominate, monitor or direct.

In hiring for the lab, we placed a high premium on initiative, courage and open communication.

We held bi-weekly meetings where people regularly reported on their work and shared information with others.

People moved around offices and sat in different places so they'd get a sense of what was going on in other areas.

There was always an ample number of problems and difficulties to discuss.

One can have personal independence and entrepreneurship even within the goal of a clearly defined and articulated program.

– Jay Forrester

Another characteristic of the organization was that there was no necessity for information to go through channels.

The Director of the Division of Sponsored Research might drop in and talk to people that worked for me. I would come in at the lab bench level, and look at what people were doing, talk to them about it, even though they worked for someone else.

BE: There were not the barriers to communication that one sees in a lot of organizations. Everyone had his task and knew where it fit into the final objective. If you did your work, and delivered, you were an honored member of the organization.

You got plenty to do, you got invited to the director's Friday afternoon teas. You got told what was going on. There was never any question of cozying up to the boss. Nobody ever cozied up to Jay; it wouldn't have done him any good, anyway.

Ken Olsen, who was part of the team, speaks about the confidence that people in those days had; he says it's confidence that the management would look after them.

I don't think so. I think it was that people had confidence in themselves. They had confidence that management was looking out for the outfit and that if they did their job, they would be treated well.

JF: There was a core team. It was a team that knew what was likely to follow at every step they were engaged in. Furthermore, they were expected to go through all the steps and be there at the end.

This makes a tremendous difference in organizations. As organizations get bigger, there is an unnecessary tendency to subdivide into functional activities.

There are people in research, design, development, tooling, production and sales. They never come together. Every step is done blaming the people in the prior step and creating problems for the people in the next step.

There's no one who has a sense of responsibility when you're through. If it goes well, there's no identifiable hero; if it goes badly, there is no one who learns the lesson.

Everyone says: "I wasn't involved." In fact, there was no one that was involved in all of it. So there's not much learning out of mistakes in many organizations. By contrast, I think we had an organization that had gone through that whole cycle as a team, and knew what it was like at the other end.

BE: It was very important that it was a team of people who had worked with each other for a long time. Then you understood each other's strengths and weaknesses, so that you automatically gave the right jobs to the right people, and you knew where to go to get help.

It wasn't a fixed organization. It was a team. You expected the job to change. The job flowed by, and the team configured itself to do whatever had to be done at that time.

That's a very different way of looking at it than most bureaucracies where, as Jay says, the people own some particular job and they own some particular group, and nobody owns the thing as a whole except maybe somebody so far up that he hasn't got any grasp on what's going on at the bottom.

JF: The kind of team approach we had can still be effective in today's very different environment. I am a proponent of a decentralized entrepreneurial form of organization – bringing inside the corporation the legal structure of the outside world.

You start by erasing the idea of the superior subordinate relationship. A lot of people say that can't work. But there is no superior subordinate relationship between your dentist and General Motors.

There is no superior subordinate relationship between any of the legal entities in the economy, so why should there be inside a subdivision of the economy?

Another way of putting it is that every person wants to have authority decentralized down to his level, and centralized up to his level.

BE: That's clear. Let's make the proper distinction though, between separable parts in the organization.

Anybody who worked for Jay understood who was the boss. The boss, the leader of Jay's organization, was Jay. This meant, among other things, that there was a clear vision of where we were going and what we were trying to do. The rest of the organization had to fit into that.

The one thing a leader has to have is followers. If you're going to make an automobile you can't tell George to build any kind of engine he wants. You can't build computers that way, either, and you can't build air defense systems that way.

If you break it up in too many pieces and these pieces are in fact intertwined, then you run the risk that the conception as a whole will not come true.

There was a core team. It was a team that knew what was likely to follow at every step they were engaged in.

– Jay Forrester

JF: Very often organizations begin to work on all the pieces of something before anybody has decided what the something is to be, or how the pieces are to go together.

BE: I absolutely agree with that. But it's the job of the person at the top to define what it is you're trying to do, and see that the goals are properly set up, and that people know what they're supposed to do. Pick the people.

If that's done properly, then the thing will run. From then on, you just keep an eye on it and help each of them.

It's critical to have a team of people who understand each other, and have been through things together. Then you can break it up, because the people know what they're doing, and they know what the problems are, and they see that the interfaces are properly defined.

If you do not have a team, but just have a scattered group of people that you've brought in or that just appeared, and ask them to do the same thing, they wouldn't understand or trust each other. You run the danger of getting into very serious troubles before you find out about it. But this is a real conflict, a need to make sure that you get the things that you need for the large part, and at the same time what you need for the pieces.

JF: Part of that freedom to get the job done is to run an organization that has a certain amount of slack in it – where there is money and space that isn't overcommitted.

BE: Lack of slack is one of the troubles big organizations get into. They end up with each group having too little money and too much commitment. It's a normal result of the way that jobs and money are divided up.

Nobody knows what he is doing when he's on the leading edge. Lack of slack results in cost overruns, because it costs more to build something if you've got less than the money you need, than if you had the money you needed at the beginning.

You lack the resources to protect yourself, to put in backups, to try different things. You're forced to gamble that everything will be all right.

It's never all right! When something turns wrong, you've got a big problem because there is no room to maneuver. It takes longer and it costs more money to have everything carefully planned and every scrap of surplus money taken out. That's the worst possible way of doing business.

JF: Another reason that it costs more and takes longer when there are not surplus resources is that a larger and larger percentage of time goes into fighting about the resources rather than doing the job.

To go back to the idea of teams, that I think are tremendously important, all the folklore is against them.

They're called cliques. They're looked upon as bad. One reason

effective teams are looked upon as bad is that a real team has great power.

One can have personal independence and entrepreneurship even within the goal of a clearly defined and articulated program. Independent action results from a match between responsibility, authority, and the specification of the task.

Clear specification implies thought about what the whole project is to be before allocating parts. A lot of wasteful programs start before those decisions have been made.

Ken Olsen, who was part of the team, speaks about the confidence that people in those days had; he says it's confidence that the management would look after them.

– Bob Everett

You can't create balanced authority, resources and specifications without having given a lot of thought to the overall goal. With enough thought to goals and interfaces, one can challenge people.

Then, what they accomplish is primarily a reflection of their ability, and not a reflection of how they have been impeded by other people. I think people do respond to a fair and challenging match of responsibility, authority and resources. They like to work in such a setting.

BE: If you want a team, it's fundamental that the people really understand each other.

JF: In frontier research and development, it probably takes ten years to create such a team. It's not something that you do in six months or a year. One must see the mistakes and the shortcomings and the successes of the members and arrive at a point where the abilities of each person are shared.

Use each person's strength. If you can combine the strengths, and essentially neutralize the weaknesses, you get a powerful organization.

An organization is a tremendously powerful filtering process. It repels the people that don't fit. Those that do come in, get conditioned to fit. If they won't be conditioned, the organization repels them.

The character of an organization and its internal attitudes become strongly self-perpetuating. An authoritarian organization where the decisions are made at the top results in the kind of atmosphere seen in many corporations where people feel helpless.

There are many kinds of discipline. There's the kind of just looking over someone's shoulder and telling him every step to take. That's a very suppressive kind of discipline.

The ideal kind of discipline exists where there is a clear goal. If the person succeeds in meeting the goal, there is an important lasting consequence and contribution from it.

It's not sufficient to meet a goal and then find it is unused or ineffective or doesn't fit with other people's plans. Such futile activity doesn't hold people's loyalty through many such cycles.

BE: That's true. You have to set that goal. You have to reach an agreement on what you're trying to do. I think the discipline at the lab was a two-way discipline. The people committed themselves to do things. They couldn't change their mind over a weekend. That wasn't allowed.

The discipline worked down, as well as up. If you told a guy to build a part of the computer, and if he built it right, and it wasn't used, you had a tough time explaining to him why.

It works both ways. It's kind of like a contract. But that contract has to be signed. Just having a contract, and insisting that people live up to it, doesn't work if the contract isn't signed.

It has to be deliverable in the sense that the technology is at least possible, and it has to be deliverable in the sense that the people who are doing it are capable of doing it and they have adequate resources to do it.

There also have to be mechanisms for changes, facing up to the unforeseen difficulties when they happen. If you have a good sound contract, that's good.

If you want a team, it's fundamental that the people really understand each other.

– Bob Everett

JF: Another characteristic of the laboratory was not feeling that we had to save face by sticking with our prior plans and commitments, because those plans and commitments did change many times.

We were willing to say we were wrong, and here is what we will do instead. A lot of organizations won't admit they had made a mistake, so they keep going down the road. That is the mistake.

A good example of plans that changed arose in the early design goal of the Whirlwind project. It specified an analog computer for an aircraft analyzer. It turned out to be a digital computer for a combat information center. There wasn't really anything that survived from the first.

BE: In the days when computing was such new territory it was important to keep your plans flexible. It still is, but then it was even more so. ■

An open letter to our customers.

Business is going through rapid and often unsettling change. One message is clear: it is essential for businesses today to change to open information systems which deliver better communication from within and without, ones which provide information more easily and reliably. Our challenge is to demonstrate that we can build these open systems better than anyone else, and we promise to do just that, while conserving and enhancing your existing IT investments. That's one advantage of The Open Advantage. Our Digital people will be happy to share all the advantages with you.

Pier Carlo Falotti
President and Chief Executive Officer
Digital Equipment Corporation
(Europe)

Note: The above letter is part of Europe's version of the Open Advantage Campaign

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In the U.S., the Employee Master File is used for addresses. In the U.K. the PIMS System is used for addresses. If your address is incorrect, please see your Personnel Representative. Other European facilities and those in GIA are serviced on a list basis and are updated and revised periodically.